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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,508	12/11/2003	Suk-Hyen Jung	SHIN1.003AUS	5966

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EXAMINER

TRAN, KHAI

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/735,508	JUNG, SUK-HYEN	
	Examiner	Art Unit	
	KHAI TRAN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11,16,17,19-24,30 and 31 is/are rejected.
- 7) ☒ Claim(s) 2,12-14,18 and 25-29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/11/2003, 12/2/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-7, 11, 16, 17, 19-22, 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art of the record (see Figure 1 in the specification) in view of Sindhushayana (US 2004/018174 A1).

Regarding claim 1, the admitted prior art discloses an apparatus for processing and transmitting a signal, the apparatus comprising: a splitter (110) configured to split an input signal (input data) into two or more signals comprising a first signal and a second signal;

The admitted prior art fails to disclose an interleaver configured to interleave the first signal to provide a first interleaved signal; a first multiplier configured to multiply the first interleaved signal with a first code to provide a first coded signal; a second multiplier configured to multiply the second signal with a second code to provide a second coded signal; and a transmission unit configured to transmit the first coded signal and the second coded signal.

Sindhushayana discloses a transmitter as shown in Figure 1, comprising an interleaver (18) configured to interleave the first signal (from a turbo encoder 14) to provide a first interleaved signal; a first multiplier (20) configured to multiply the first

interleaved signal with a first code (Walsh1 code) to provide a first coded signal; a second multiplier (26) configured to multiply the second signal with a second code (Walsh2) to provide a second coded signal; and a transmission unit (a modulator 32 and an antenna 34) configured to transmit the first coded signal and the second coded signal. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transmitter of the admitted prior art by using the interleaver, the first and second multipliers and the transmitter as taught by Sindhushayana for generating composite signal. The motivation would be to reduce interference and achieve low error rate at signal-to-noise (SNRs).

Regarding claim 3, Sindhushayana discloses wherein the first and second signals are identical ([0051] to [0056]).

Regarding claims 4-5, the admitted prior art discloses the apparatus further comprising: a converter (110) configured to convert an input data into a plurality of bit streams; a modulator (120) configured to modulate the plurality of bit streams to provide modulated signals; and an adder (130) configured to add the modulated signals and provide the summed signal as the input signal to the splitter; wherein the modulator is configured to modulate each of the plurality of bit streams in conjunction with a Walsh code (see Figure 1).

Regarding claim 6, Sindhushayana discloses wherein at least one of the first and second codes is orthogonal to a code with which at least one of the plurality of bit stream is modulated (see Fig. 1).

Regarding claim 7, Sindhushayana fails to disclose wherein the second code is a Gold code. Sindhushayana discloses a second code (Walsh2 28) modulated with a signal from the time division combiner 16). However, the Walsh codes and orthogonal Gold code are well known as those having high orthogonality in the spread spectrum wireless communications. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the Gold code in place of Walsh code into the teachings of Sindhushayana in order to secure the number of spread codes to be allotted to users.

Regarding claim 11, the admitted prior art discloses wherein at least one of the first and second codes is orthogonal to a code with which the input signal is pre-modulated (see Fig. 1).

Claim 16 is similar to claim 1. Therefore, claim 16 is rejected under a similar rationale.

Claims 17, 19-22, are similar to claims 1, 3-7, 10. Therefore, claims 17, 19-22 are rejected under a similar rationale.

Regarding claim 30, the admitted prior discloses wherein the input signal is originated from a voice (see page 1, [002]).

Claim 31 is similar to claim 1. Therefore, claim 31 is rejected under a similar rationale.

3. Claims 8-10, 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art of the record (see Figure 1 in the specification) and Sindhushayana (US 2004/018174 A1) in view of Suzuki (U.S. Pat. 5,787,122).

Regarding claims 8-10, the admitted prior art and Sindhushayana fail to disclose wherein the transmission unit comprises one or more antennas, and wherein the first coded signal and the second coded signal are configured to be transmitted through a single antenna; and an antenna selector configured to select the signal antenna from the one or more antennas. Suzuki discloses a transmitter as shown in Figure 8, comprising: an antenna switcher 26 for selecting randomly antennas under control of the communication control unit 28. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the antenna switcher as taught by Suzuki in the teachings of the admitted prior art and Sindhushayana for selecting one of the antennas. The motivation would enable the switch antenna to select an optimal antenna for transmitting signal to an approximated receiver.

Claims 23-24 are similar to claims 8-9. Therefore, claims 23-24 are rejected under a similar rationale.

Allowable Subject Matter

4. Claims 2, 12-14, 18, 25-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: the admitted prior art, Suzuki, and Sindhushayana fail to disclose a delay configured to delay the second coded signal to provide a time-delayed second coded signal, wherein the transmission unit is configured to transmit the time-delayed second coded signal in lieu of the second coded signal; the two or more signals further

comprise a third signal, wherein the apparatus further comprises a third multiplier configured to multiply the third signal to provide a third coded signal, and wherein the transmission unit is further configured to transmit the third coded signal; a second delay configured to delay the second coded signal to provide a time-delayed second coded signal; a third delay configured to delay the third coded signal to provide a time-delayed third coded signal; and wherein the transmission unit is configured to transmit the time-delayed second and third coded signals in lieu of the second and third coded signals, respectively; wherein the second delay is configured to delay the second coded signal for a second delay period, wherein the third delay is configured to delay the third coded signal for a third delay period, and wherein the second and third delay periods are different from each other.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Song et al (US 2004/0202138 A1) disclose a multi-carrier DS/CDMA system using a turbo code with non-uniform repetition coding.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KHAI TRAN
Primary Examiner
Art Unit 2611

KT
February 15, 2007